b. Less numerous than in the cerebral cortex, but yet abundant are the altered cells in the foot of the hippocampus;

c. In the cerebellum the degenerated cells sare found in the molecular stratum;

d. The neuroglia in the whole region studied is more or less altered. KRAUSS.

THE NEUROGLIA, NORMAL AND PATHOLOGICAL.

F. W. Enrich has published the results of some careful work with the new Weigert stain for neuroglia (Brit. Med. Jour., Oct. 10th, 1896).

"The results obtained by this new method are somewhat at variance with the views held by Golgi and others. The latter believed that the neuroglia consists of an intricate feltwork of cells and their branches; Weigert is of opinion that in the adult, at least, these fibres or branches become differentiated from the protoplasm of the cell body. The usefulness of a method increases in proportion as it is employed side by side with other methods. Golgi's process has demonstrated the epiblastic origin of neuroglia; the shapes and forms of its primitive elements in the fœtus and their relation to nerve cells, nerve fibres and blood vessels; comparative anatomy has shown the evolution of the neuroglia cell; and Weigert's stain shows the ultimate stage of this neuroglia, and its distribution in the human adult. Not all the neuroglia appears to reach this last stage, in which the fibre has become differentiated from the cell protoplasm; some probably remains in the pure cell condition, but ready to form the ultimate fibre when called upon to do so. Whether these newly-formed fibres which constitute all forms of sclerosis and all cicatricial processes within the central nervous system are formed from cells which have rejuvenesced, as it were, after having in the natural course of their development given off the full-formed fibre, or whether the younger type of neuroglia cell is the parent, cannot as yet be determined. Weigert's view as to the nature of adult neuroglia has been objected to on technical grounds; the neuroglia fibres even in the adult are said by these opponents to be still real cell processes; a study of the processes going on in the cerebral cortex in general paralysis sufficiently refutes this. Of the functions of the neuroglia we know little; probably a more complete study of the dstribution of that tissue will aid us. Possibly its function varies with each step in the development of the nervous system; at first it directs the growth; then it supports fibre and cell; and lastly, it insulates. In addition it probably acts as a fourth coat to the blood vessels, which, in the central nervous system, are notoriously in adventitia. Abnormalities in the formation of the neuroglia may possibly affect detrimentally these functions; but this subject requires a further and vaster amount of study. Neuroglia cells have also been supposed to have a "scavenger" function in some morbid processes, and to be part of a lymph connective system; this theory, however, is very improbable in the face of the development and distribution of the neuroglia elements. Some interest attaches to the relation between syringomyelia and so-called central "gliosis"; Weigert appears to be of opinion that the former cannot result from a softening of the latter. Another interesting feature is the varying direction of fibres in secondary sclerosis. The majority run parallel to the course of the degenerated axis cylinder; but some, for example, in the spinal cord, run at right angles to it, and outwards beyond the area of a nerve degeneration, till they reach the peripheral zone of neuroglia which becomes thickened. This secondary hypertrophy of the subpial layers has perhaps now and again been mistaken for a peripheral degeneration of nerve fibres." PATRICK (Chicago).

DEGENERATION FOLLOWING LESIONS OF THE OCCIPITAL LOBE.

Shaw (Brit. Med. Jour., Sept. 12th, 1896) reports the results of careful study of the degenerations caused by lesions of the occipital lobe in ten monkeys. In some the entire occipital lobe was removed, in others a circumscribed lesion was made. The following summary is a very brief statement of the findings and conclusions of the author.

"1. A lesion, therefore, of the cortex of the occipital lobe gives rise to descending degenerations.

"2. The degenerated fibres pass down by way of the corona radiata.

"3. Having reached the level of the corpus callosum, a division into the main groups occurs; one group transverses this commissure to reach the opposite side.

"4. Of those which remain on the same side of the lesion, the majority occupy the hindermost part of the capsule, and end in the grey matter of the pulvinar, external, geniculate body, and anterior corpus quadrigeminum. Others are found scattered throughout the posterior two-thirds of the internal capsule, and descend into the crusta of the crus cerebri.

"5. Of the crossed fibres, most pass into the white matter of the opposite occipital lobe, and no doubt end in the cells of its cortical grey matter. Others, however, turn forwards and descend in the internal capsule, occupying its posterior two-thirds. These ultimately reach the crusta of the crus cerebri.

"6. Some of the degenerated fibres occupying both crustæ probably end in the gray matter of the substantia nigra, while others reach the pons.

"7. Degenerated fibres also pass towards the posterior commissure; some of these traverse it to gain the opposite side, and turn downwards; others remain uncrossed. Both sets apparently end in the grey matter around the aqueduct of Sylvius. These supply a connection between the cortex of one side and the nuclei of nerves to the eye muscles on both sides.

"8. A few degenerated fibres were found in the posterior longitudinal bundles on both sides, probably some of the set last described. Others, inconstant in number and situation, were found in most of the medulla and cord. No importance was attached to these latter."

Patrick (Chicago).

The Pathology of Multiple Sclerosis. By Prof. A. Strümpell (Neurologisches Centralblatt, No. 21, 1896).

Strümpell has been unable to confirm the statements, made by Marie, that multiple sclerosis in most cases follows infectious diseases. In at least thirty or forty patients examined by the writer, it was exceptional to find any connection with infectious diseases. Neither can he agree with Oppenheim in regard to the influence of toxic agents (lead, alcohol, etc.) in the production of the disease.

It is not probable that the morbid process has its origin in the vascular system. If this were true, it would have to be a vascular disease which begins exclusively in the smallest vessels of the central nervous system, as there are no corresponding alterations in the other organs of the body.

Strümpell is inclined to regard multiple sclerosis as an endogenic process; as one which has its origin in congenital malformation. He has observed a case of hydromyelia combined with central gliosis and disseminated sclerosis, which he explains in this way. The frequent commencement of the disease in youth, and the preservation of the axis cylinders in the sclerotic areas for a long period are in favor of this opinion. In almost all exogenic processes the nerve cells or axis cylinders are early affected. It is probable that in multiple sclerosis the disease begins in the proliferation of the neuroglia.

Strümpell states that in most cases of disseminated sclerosis the intention tremor in no way differs from the ataxia seen in tabes, Friedreich's disease, etc. As ataxia of an intense degree may be noticed